

## Prevention of Falls from Windows

The Building Code of Australia (BCA) has always contained measures to prevent falls from heights. Until relatively recently, there were no specific requirements for windows, designers and certifiers would try to adapt the requirements for balustrades and apply them to windows. Finally, in 2009 specific requirements for windows were introduced. They were incorporated with, but distinct from the balustrade requirements. The wording has changed slightly over the years, but the essential details of the requirements have remained the same since BCA2009.

In response to a spate of children falling from windows the Australian Building Codes Board (ABCB) undertook to introduce new measures in the National Construction Code through BCA2013 to specifically prevent small children from falling from windows and balconies.

The following is an extract from **BCA2013 VOL.1**. The requirements for VOL.2 (Class 1 and 10 buildings) are the same.

### Performance Requirements

#### **DP3**

##### **Where people could fall -**

- (a) 1m or more-
  - i) from a floor or roof or through an opening (other than through an openable window) in the external wall of a building; or
  - ii) due to a sudden change of level within or associated with a building; or
- (b) 2m or more from a floor through an openable window -
  - i) in a bedroom in a Class 2 or 3 building or a Class 4 part of a building; or
  - ii) in a Class 9b early childhood centre; or
- (c) 4m or more from a floor through an openable window not covered by (b),

##### **a barrier must be provided which must be-**

- (a) continuous and extend for the full extent of the hazard; and
- (b) of a height to protect people from accidentally falling from the floor or roof or through the opening or openable window; and
- (c) constructed to prevent people from falling through the barrier; and
- (d) capable of restricting the passage of children; and
- (e) of strength and rigidity to withstand-
  - i) the foreseeable impact of people; and
  - ii) where appropriate, the static pressure of people pressing against it.

**Limitations:**

DP3 does not apply where such a barrier would be incompatible with the intended use of an area such as a stage, loading dock or the like.

**DP3 (d) does not apply to -**

- (a) fire-isolated stairways, fire-isolated ramps, and other areas used primarily for emergency purposes, excluding external stairways and external ramps; and
- (b) Class 7 (other than carparks) and Class 8 buildings and parts of buildings containing those classes.

**Deemed to satisfy provisions**

**D2.24 PROTECTION OF OPENABLE WINDOWS**

- (a) A window opening must be provided with protection, if the floor below the window is 2 m or more above the surface beneath in-
  - i) a bedroom in a Class 2 or 3 building or Class 4 part of a building; or
  - ii) a Class 9b early childhood centre.
- (b) Where the lowest level of the window opening is less than 1.7m above the floor, a window opening covered by (a) must comply with the following:
  - i) The openable portion of the window must be protected with-
    - (A) a device to restrict the window opening; or
    - (B) a screen with secure fittings.
  - ii) A device or screen required by (i) must-
    - (A) not permit a 125 mm sphere to pass through the window opening;
    - (B) resist an outward horizontal action of 250 N against the-
      - (I) window restrained by a device; or
      - (II) screen protecting the opening; and
    - (C) have a child resistant release mechanism if the screen or device is removed, unlocked or overridden.
- (c) A barrier with a height not less than 865 mm above the floor is required to an openable window-
  - i) in addition to window protection, when a child resistant screen release mechanism is required by (b)(ii)(C); and
  - ii) for openable windows 4 m or more above the surface beneath if the window is not covered by (a).
- (d) A barrier covered by (c) must not-
  - i) permit a 125mm sphere to pass through it; and
  - ii) have any horizontal or near horizontal elements between 150mm and 760mm above the floor that facilitate climbing.

*(For Vol.2 requirements see: P2.5.2 and 3.9.2.5)*

The new requirements, which will come into effect on 1 May 2013, apply only to windows in bedrooms in Class 1, 2, 3 buildings, Class 4 part of a building or Class 9b early childhood centres. They are intended to apply to two storey and above buildings and parts of single storey buildings on steeply sloping blocks. All other windows where the fall height is 4 m or greater will follow the existing requirements (as per D2.24 (c)(ii) and (d) above).

The important factors are the size and height above the floor of the opening and the existence of footholds that can be used for climbing.

**For Windows in Bedrooms and early childhood centres with openings within 1700 mm above the floor:**

- **If the opening is more than 865 mm above the floor and there are no climbable elements, then removable screens or restrictors that can be overridden by an adult may be used.**
- **If the opening is less than 865 mm above the floor or there are climbable elements, then permanent screens or restrictors are required.**

It can be seen that there is an advantage in having the glazing extend to the floor, without any climbable elements. This allows for screens or restrictors that can be overridden if required.

Similarly, for all other windows where the fall height is 4m or greater:

- If the opening is more than 865 mm above the floor and there are no climbable elements, no screens or restrictors are required.
- If the opening is less than 865 mm above the floor or there are climbable elements, then permanent screens or restrictors are required.

Again, there is an advantage in having the glazing extend to the floor.

There are a number of hardware solutions available, such as short chain winders and barrier screens which will allow windows to comply with the new requirements. We have been advised sliding window vent locks which key lock the sash at 125 mm, but allow the sash to open fully when unlocked will meet the requirements of the BCA. However, care must be taken to ensure that the water performance of the sill is not compromised by the hardware fixings. Unfortunately, it is envisaged that there will be a few problems from DIY after-market installations.

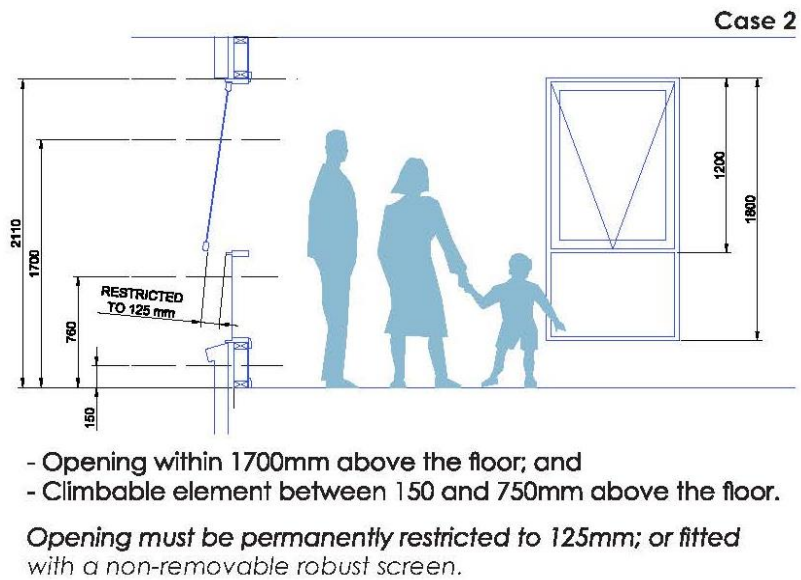
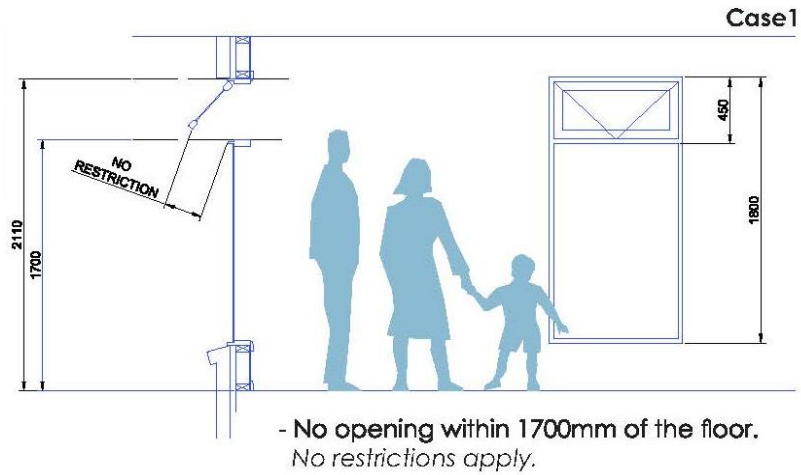
An AWA technical sub-committee is developing a method of testing screens and hardware to meet the BCA requirements and an Industry Code of Practice will shortly be publishing which can be used to demonstrate compliance with the BCA.

### **Ventilation?**

One question that has arisen is how do these requirements affect the BCA ventilation requirement that the opening area of a window be 5% of the floor area of the room. The ABCB have advised that the ventilation area of a window is calculated by the total area of the sash, not by the openable area.

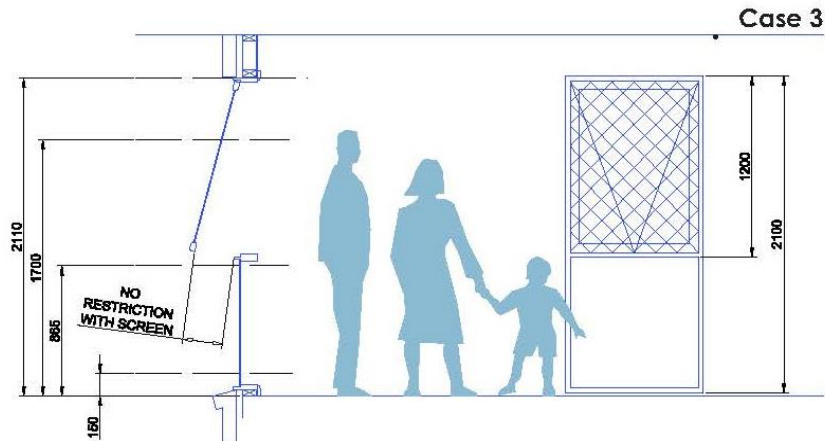
**For Windows in Bedrooms**

**WHERE THE FALL HEIGHT IS 2M OR GREATER**

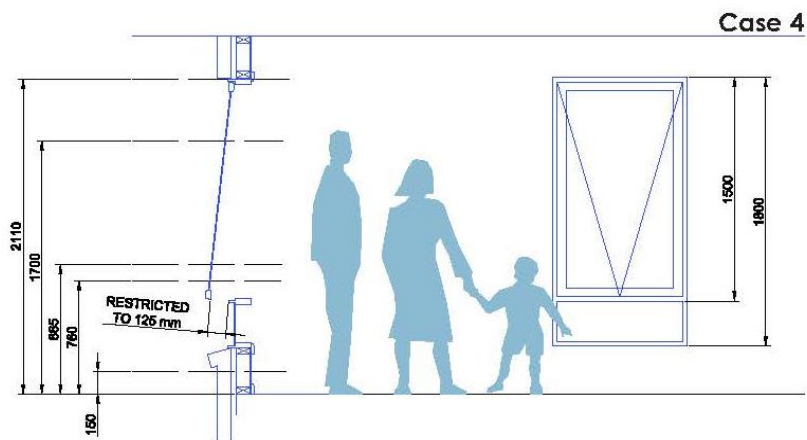


**For Windows in Bedrooms**

**WHERE THE FALL HEIGHT IS 2M OR GREATER**



- Opening between 865 and 1700mm above the floor; and
  - No Climbable element between 150 and 760mm above the floor.
- Opening must be restricted to 125mm; or fitted with a removable robust screen.*

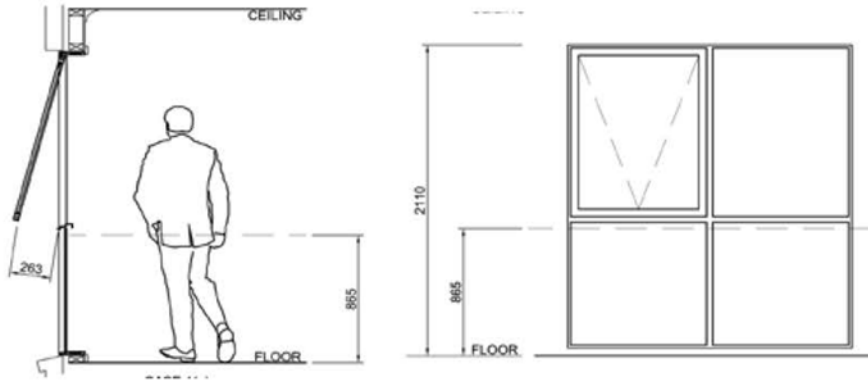


- Opening within 865mm of the floor; and
  - Climbable element between 150 and 760mm above the floor.
- Opening must be Permanently restricted to 125mm; or fitted with a non-removable robust screen.*

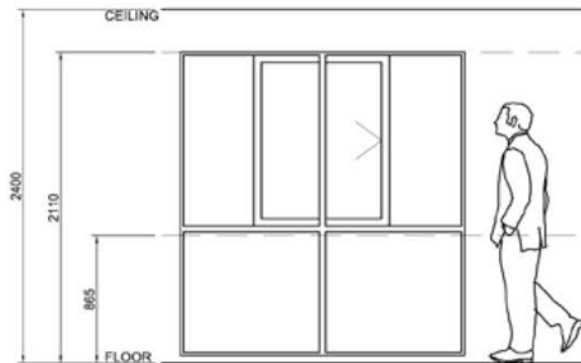
**All other Windows**

**WHERE THE FALL HEIGHT IS 4M OR GREATER**

**Case 5**



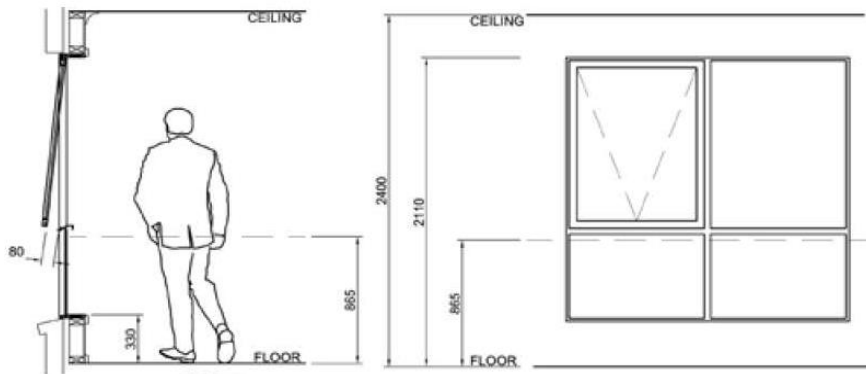
A window with a transom above 865 mm, and a sill height less than 150mm. There is no opening within 865mm of the floor and therefore there is no requirement to restrict the opening of the sash.



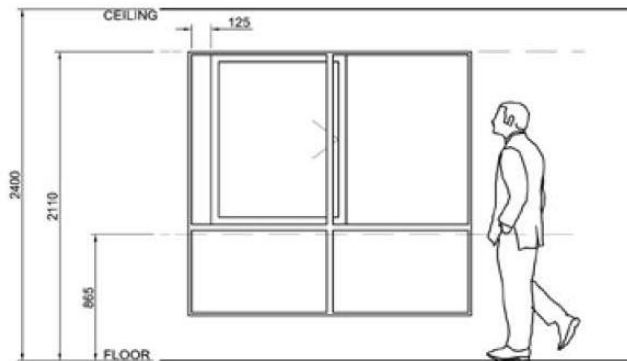
**All other Windows**

**WHERE THE FALL HEIGHT IS 4M OR GREATER**

**Case 6**

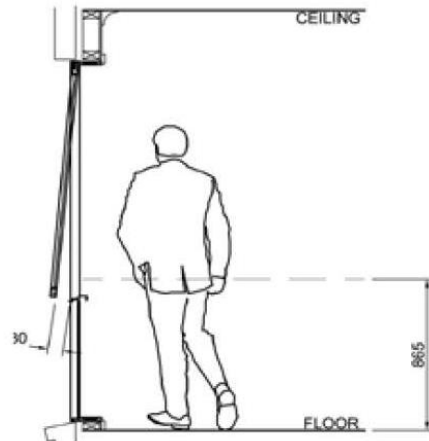


A window with a transom above 865 mm and a sill height greater than 150 mm. Even though the transom is higher than 865mm, the height of the window sill can facilitate climbing and so the opening of sash must be restricted.



**All other Windows**

**WHERE THE FALL HEIGHT IS 4M OR GREATER**



**Case 7**

A window with a transom below 865 mm, Sill height less than 150 mm. The operable part of the window is within 865mm of the floor, so the opening must be restricted.

